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THE REVISIONARY WORK ON THE FLORA OF SRI LANKA

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ABSTRACT

One effect of the flora-writing age of the twentieth century has been a Revised *Handbook to the Flora of Ceylon (1968 – 200)*: its *Reversionary work* began under the aegis of the *Ceylon Flora Project* supported by the Smithsonian Institute, the Ceylon Department of Agriculture and the University of Ceylon, Peradeniya. The scientific programme of the work has covered the broad ranks of taxonomy based on material of field explorations and followed by herbarium study representative of 195 families of the phanerogamic flora. The fruit of the attempt has produced a *Descriptive Flora* of a semi-monographic nature that presents a systematic study of plants of the mid nineteenth century, along with an emphasis on current nomenclature allied to the details of specific distribution and ecology. A salient emphasis is laid on the *type method* governing a stable nomenclature over Trimen's faulty method of circumscription; and nomenclatural correctness has been improved from collections either of past authors or those of the Flora Project; new collections have thus also helped to better the correctness of former plant names; and an additional support to this advance are the *Critical Notes*. Often a necessary tag to descriptions. Yet more research into the summarised salient features of the *Project's Reversionary Work* may yet reveal further areas of interest in the systematic botany of Sri Lanka.

INTRODUCTION

The influence of the post-Linnaean period of plant taxonomy had led to traces of the Benthamian synthesis of analysis and conciseness in flora-writing. Bentham's near precision-style in it had yet preceded the exploration of new territories in different parts of the world, resulting in the further addition of plant material flowing into botanic gardens and herbaria. And in the later twentieth century the new impetus in flora-writing had forged the revision of out-dated Floras; and under the added need of concentrating attention on our plant resources through such floristic attempts, and that of falling in line with the trend of the flora-writing age of the twentieth century, it was timely that a revision of Trimen's *Handbook to the Flora of Ceylon* be initiated.

Already by the mid-sixties of the nineteenth century systematic botany was beginning to live through a golden age; this resulted in the production of different forms of flora-writing. One big assessment of this movement in the East was the *Revised Handbook to the Flora of Ceylon* done in two separate sessions: one between 1968-1979, funded by the *Smithsonian Institution*, the other between 1990-2000, funded by the *British Overseas Development Administration*. It had brought about many systematic improvements over Trimen's *Flora*, and had presented instead a

modern, semi-monographic taxonomic study of plants leading to more information from a wider range of collection localities.

The two sessions of the Revision was a multi-authored, co-operative work of international specialists that appeared seventy odd years after Trimen's *Flora*; and the intervallum involved of slackened activity finally led to update Trimen's original work; this carried a particular orientation to the current nomenclatural changes and the readjustments of the taxonomic ranks of its flowering species.

The stimulus for this Revision was finally orientated by the realization of the fact that "no *Flora* or *Revision* is the last work on any group; research goes on continually, but its publication is often delayed." (Cullen, 1984). In reference to such a *Flora Revision* in Sri Lanka Dassanayake says it differently: "The completion of the flora revision is certainly not the end of floristic studies in this country." Hooker before had said something similar in regard to his *Flora of British India*. And the Revised Sri Lankan *Flora* equally comprehends neither a fullness nor a completeness of vision in its review of 20 years of critical investigation into its flowering plants, involving taxonomic research leading to identification, and allied data, like

amassed new collections, inventories, keys and critical notes.

THE CEYLON FLORA PROJECT

This was a planned scientific venture towards the prospect of the modern revision of the Ceylon Flora, and was first mooted in 1967 by Prof. B. A. Abeywickrama; the programme of its first working session began in February 1968 under the title of *The Ceylon Flora Project*, supported by the Smithsonian Institute's *Excess Foreign Currency Programme*, and jointly by the Ceylon Department of Agriculture and the University of Ceylon, Peradeniya, with Dr. F. R. Fosberg as the overall Principal Investigator.

The administration of the Ceylon Flora Project was housed in the National Herbarium of the Botanic Gardens, Peradeniya, and was linked to the Department of Botany, University of Peradeniya, and the Department of Agriculture, Peradeniya. The co-principal investigators of the Project were Prof. B. A. Abeywickrama, Dr. J. W. L. Peiris, Deputy Director (Research), Department of Agriculture, Peradeniya, Mr. D. M. A. Jayaweera, Superintendent, Royal Botanic Gardens, Peradeniya, and Mr. K. L. D. Amaratunga, Systematic Botanist, Department of Agriculture, Peradeniya.

Others cooperating with the work of the Project were Prof. M. D. Dassanayake, Department of Botany, University of Peradeniya, Prof. H. Cruz, Department of Zoology, University of Peradeniya, and Mr. D. T. Ekanayake, who succeeded Mr. Jayaweera as Superintendent, Royal Botanic Gardens, Peradeniya.

Mention needs be made of the local staff, too, some of them graduates of the Universities of Peradeniya, Colombo, and Bombay; added to it was Mr. F. H. Popham, Principal Field Officer for the Smithsonian Institution, Washington. In the first year of the Project, acting in the place of Dr. F. R. Fosberg, was Prof. Dieter Mueller-Dombois, then Principal Field Investigator of the Ceylon Ecology Project.

The scientific work of *The Ceylon Flora Project* involved a critical examination of the flowering plants of Ceylon seen in the nineteenth and twentieth centuries, under the range of their

taxonomic ranks. This was necessitated towards the end of a past period of irregular taxonomic activity, following the works of Trimen's *Handbook* and Alston's *Supplement*. Against this background there was also an awareness of the current conservation and destruction issues in the forested areas of the country. The new floristic attempt by this project was then an ambitious programme to providing more allied information covering the revision of 195 families of the phanerogamic flora, according to the then prevailing taxonomic situation, with a particular emphasis on nomenclature according to the prescriptions of the *International Botanical Code*.

The important floristic-taxonomic attempt of the Flora Project, as Dassanayake puts it differently, "is to bring together current knowledge gained from the study of our plant life, to form an up-to-date knowledge base." This covered a wide range of plant material in the country, including what was already left conserved in the herbaria of the Peradeniya Gardens, Kew Gardens, the British Museum, and other similar foreign institutions. It was then further widened by "the preparation of large (new) collections of the fast disappearing flora of Sri Lanka. No attempt has been made to count the specimens collected, but they number well up in their thousands." This will be emphasized a little further in the text.

On the other hand, in addition to the emphasis on identification the methodology of this attempt in the treatment of the families has produced more than just a well-revised descriptive Flora of a semi-monographic nature, conformable to the view of Bentham's (1861) traditional school of the mid-nineteenth century; and the range of the Revised Flora's taxonomic programme, and was proportionately increased by the many new collections that particularly sharpened the former standard of Trimen's Flora.

Summary of the General Perspective Layout of the Revised Flora.

The Flora, as reviewed in the ensuing accounts, has been well laid out according to the principles of systematic botany of the flowering plants of the mid-nineteenth century, influenced chiefly by Bentham's comprehensive view of a flora with sub-monographic accounts, and linked together with a general emphasis on current nomenclature, according to the provisions of the

International Code of Botanical Nomenclature; the layout also included critical notes especially on the specific distribution and ecology of the taxa in question. Keeping in mind the application of the principle of priority the format paid special attention to making many name-changes of the former text, often used in relation to the different appropriate ranks of taxa, from genus down to varieties. In many examples, a genus with a specific species has been transferred to another related one according to its considered differently appropriate generic rank; in other instances a species has been changed into a different one of the same genus; and yet in other cases varieties have been merged within their own species, or elevated to a new species of the same genus.

FILD EXPLORATIONS

Floristic explorations in the field, a significant part of the layout, have carved out much of the time-span (20 years) of the Project, including that for herbarium study. The collections have helped in building up the inventory of plants, no less than in pointing out at the same time the threatened and endangered species and habitats, too. In this endeavour, the explorations have covered much of the eight provincial districts of the country, a gigantic task that has cost a lot of investigation and time out of the botanists' work in the field; and in spite of these persevering efforts in the field the written inventory will still remain far from complete, and so will continue to be a never-ending process.

NOMENCLATURE AND TYPIFICATION

In general, references to nomenclatural literature have been more accurate and complete than those of the out-dated ones followed in the previous works of Trimen and Alston, and are chosen from the earlier publications of past authors. A noticeable feature of such reference-thoroughness is seen under the references to families as occur in the accounts made by modern authors like Kostermans and Noteboom.

A salient feature of the *Revised Flora* is the straightening out of the former unstable nomenclature, by the use of the current *type method* in the application of the names of plants published since 1 January 1958, as required by the *International Code of Botanical Nomenclature*. As a result, types have now governed the

nomenclatural changes of the taxa described in the revised text, from those of generic to that of varietal rank.

In the *Revised Flora*, however, current plant nomenclature has for long superseded that of circumscription as previously followed by Trimen. Its progressive methodology in nomenclature is now resorted to, instead, in clarifying the correct names of taxa by the determination of their original type specimens. In thus adhering to the modern *type method*, the Flora authors have raised the present standard of the nomenclatural correctness and stability of our plants; and the long need for such nomenclatural stability has now been straightened out for all time and the inevitable changeability of its plant names eliminated or often reduced to synonymy.

In addition, many of the types identified in the Revised Flora have often been based on the collections of the older authors, as seen sometimes, in those kept in the Linnaean and Wallichian herbaria, and other recognised ones in the West.

On the other hand, for want of a type specimen, many authors of the revised layout have resorted instead, according to the Code, to a figure of a plant or a description as the type, as given, for instance, in Roxburgh's *Plants of the Coast of Coromandel*. On the other hand, it is known that Roxburgh himself did not preserve any of his collections (distributed to other botanists); but he had, instead, left behind very accurate drawings of these species, as those seen by the author in Kew Herbarium; these are as good as the original plants Roxburgh had seen before in the field.

NEW COLLECTIONS

New collections, resulting from field explorations of the late period, have produced additional invaluable information to those already available in the local and foreign herbaria, like those of Kew Gardens and of the British Museum. In regard to collections in general, Linnaeus himself owns that "further research is not possible without them."

Among the past, large collections of Indian and Sri Lankan plants referred to by authors, special mention must be made of those by J. D. Hooker. His specific names of Asian species were

valid for a long time, because from his collection of plants (some seen in Kew by the author), he was able "to impress his estimate of specific range on the whole of the phanerogamic flora of the subcontinent." (Burkill, 1992).

A useful reference of significance to new collections in general was borne in upon van Steenis: "large collections (well identified) are useful; hundreds of them of a species are not too many." And with the impending extinction of some of our species in the country, the need for yet more collections is still urgent.

Increased new collections of active field botanists like Kostermans have contributed significantly to enlarge the inventory of many species, and had given him the distinction of "having helped to bring together one of the largest one-man collections of plants of the country" (1992).

On the whole, the Flora Project's work had still the advantage of many other overall, new material collected in floristic explorations during the accelerated period of the twentieth century in the midst of the fast disappearance of the natural forests. Richards (1970) against the present destruction of the vegetation in the tropics, comments on the still remaining collecting opportunities of the period, and remarks: "The conclusion is unmistakable: *now is the best opportunity for studying tropical botany* --- there will never be a better one....there is a heavy responsibility to use this brief moment well." The related advantage of all such new collections is that they have invariably stepped up the progress in the revision of the Flora; thus wrote Trimen in his time: "The compilation and publication of the revised list of plants of any country marks a new stage of progress in the knowledge of its botany."

DESCRIPTIONS

Descriptions in the Revised Flora, the product of systematic studies of our plants, have been as complete and precise as those made by Trimen in his time, and have high-lighted the range of taxonomic characters as far down as to those of seed morphology, thus helping in distinctly circumscribing taxa and further providing a reasonable portrait of the related plants to the reader.

SCIENTIFIC ILLUSTRATIONS

The lack of plant illustrations in the *Revised Flora*, except for a few examples, as seen, for instance, in those of the Gesneriaceae, Moraceae and Dioscoreaceae, has been a general drawback to the family treatments; this was chiefly due to the lack of a sufficient work time-scale in the persevering efforts of the individual authors.

In passing, mention may also be made here of the past set of scientific illustrations of our plants, like that of the reputed collection of Harmanis de Alwis Seneviratne, the splendid artist of Peradeniya under Alexander Moon's staff of the time. These have been frequently consulted by the Flora Project botanists. In all, the artist served at the herbarium of Peradeniya from 1823-1861, and was created a Mudaliyar in 1834. His prized collection of drawings was well preserved in the National Herbarium of Peradeniya all these many years, but was suddenly removed in 1999 to the National Museum of Colombo. The unwise move, a loss to active botanists at the National Herbarium, was strongly opposed by the scientific community of Peradeniya.

DISTRIBUTION AND ECOLOGY

As a result of extensive field explorations in the country, the respective ranges of the geographical distribution and ecological adaptability of plants have been more widened and given further information than those noted in Trimen's *Flora*.

CRITICAL NOTES

These commentaries, arising from investigations of new collections especially, and appended separately to the descriptive accounts of taxa, mark the original observations made by the authors to bring out in relief a plant's particular characteristics not emphasized ahead in the author's general account of it; in doing so the authors have enhanced the reader's knowledge of many of the Sri Lankan flowering plants. Some of these notes had been carefully recorded before in the *Ceylon Journal of Science (Biological Sciences)*.

SPECIMENS EXAMINED

A new advantage to providing further information as included in the *Revised Flora* are the useful guidelines noted on the herbarium sheets of related plants; they have pointed out the easy way to identifying the particular locations of a described species; some of the observations briefly made in these sheets have also helped in knowing the ecological preferences of a species in relation to its environment in the field.

CONCLUSION

The summarised accounts of the sections discussed above underline the on-going development of interest in the systematic botany of the Sri Lankan plants in their post-Trimenal period.

The extensive work involved in these accounts has accomplished as much as would have been done in a similar effort by an active, differently-conceived project such as 'A Botanical Survey of Sri Lanka' of the time; and the results of this revision have thus built up a close approach to a semi-monographic flora of Sri Lanka which well exemplifies Frodin's (1977) general concept "that a Flora should act as a compendium and a repository of information about the plants of an area, and not solely as a practical handbook for identification and essential information."

The resultant accounts of the fourteen volumes of the *Revised Handbook to the Flora of Ceylon*, while assembling an additional compendium of knowledge of our angiosperm-plants, have recorded in their course of the mid-twentieth and early twenty-first centuries, the increasing development of the systematic botany of the Sri Lanka plants --- a reminder of what would still remain to be done of this systematic study of our remaining tropical flora of the future

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